

WHAT IS CLAIMED IS

1. A control device for a front-and-rear wheel drive vehicle for electrically controlling a driving power transmission device which is arranged on a driving power transmission path of said vehicle for transmitting the drive power from a power source to driven wheels as either of front wheels and rear wheels of said vehicle, said control device including:

switching control means for electrically controlling said driving power transmission device to switch the drive mode of said vehicle selectively to a two-wheel drive mode or a four-wheel drive mode; and

switching inhibiting means for inhibiting the drive mode of said vehicle from being switched to a commanded one of said drive modes when said vehicle is traveling at a lower speed than a predetermined value and when the rotational speed difference between front and rear wheels is larger than a predetermined difference.

2. A control device for a front-and-rear wheel drive vehicle for electrically controlling a driving power transmission device which is arranged on a driving power transmission path of said vehicle for transmitting the drive power from a power source to driven wheels as either of front wheels and rear wheels of said vehicle, said control device including:

switching control means for electrically controlling said driving power transmission device to switch the drive mode of said vehicle selectively to a two-wheel drive mode or a four-wheel drive mode; and

gradual switching control means for electrically controlling said driving power transmission device to gradually decrease a present torque which said driving power transmission device is transmitting before the switching of said drive mode, to a target torque which said drive power transmission device is to transmit after the switching of said drive mode, when the difference between said present and target torques is more than a predetermined value at the time of the switching of said drive mode.

3. The control device for a front-and-rear wheel drive vehicle as set forth in Claim

2, wherein said gradual switching control means gradually decreases said present torque to said target torque when the difference between said present and target torques is more than said predetermined value at the time of the switching of said drive mode and when the traveling speed of said vehicle is equal to or more than a predetermined medium speed.

4. A control device for a front-and-rear drive wheel vehicle for electrically controlling a driving power transmission device which is arranged on a driving power transmission path of said vehicle for transmitting the drive power from a power source to driven wheels as either of front wheels and rear wheels of said vehicle, said control device including:

switching control means for electrically controlling said driving power transmission device to switch the drive mode of said vehicle selectively to a two-wheel drive mode or a four-wheel drive mode;

switching inhibiting means for inhibiting the drive mode of said vehicle from being switched to a commanded one of said drive modes when said vehicle is traveling at a lower speed than a predetermined value and when the rotational speed difference between front and rear wheels is larger than a predetermined difference; and

gradual switching control means for electrically controlling said driving power transmission device to gradually decrease a present torque which said driving power transmission device is transmitting before the switching of said drive mode, to a target torque which said drive power transmission device is to transmit after the switching of said drive mode, when the difference between said present and target torques is more than a predetermined value at the time of the switching of said drive mode.

5. The control device for a front-and-rear wheel drive vehicle as set forth in Claim 4, wherein said gradual switching control means gradually decreases said present torque to said target torque when the difference between said present and target torques is more than said predetermined value at the time of the switching of said drive mode and when the traveling speed of said vehicle is equal to or more than a

predetermined medium speed.

6. The control device for a front-and-rear wheel drive vehicle as set forth in Claim 1, further including:

lamp control means for selectively turning on or off a drive mode lamp which is provided on the vehicle to indicate the drive mode of said vehicle being presently selected.

7. The control device for a front-and-rear wheel drive vehicle as set forth in Claim 2, further including:

lamp control means for selectively turning on or off a drive mode lamp which is provided on the vehicle to indicate the drive move of said vehicle being presently selected, said lamp control means being operable to blink said drive mode lamp while said gradual switching control means gradually decreases said present torque to said target torque.

8. The control device for a front-and-rear wheel drive vehicle as set forth in Claim 4, further including:

lamp control means for selectively turning on or off a drive mode lamp which is provided on the vehicle to indicate the drive move of said vehicle being presently selected, said lamp control means being operable to blink said drive mode lamp while said gradual switching control means gradually decreases said present torque to said target torque.